Chapter 3

**LANDSCAPE AND URBAN PLANNING: A SYSTEMIC APPROACH**

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**ABSTRACT**

This chapter aims to present landscape and urban planning as systemic tools for renewed urban intervention, offering possibilities for a physical-spatial restructuring of urban landscapes and for a better quality of life. The current proposal considers the landscape both as a system and as an active part of the whole urban planning process. In this process, the recognition and analysis of the relationships between various landscape systems, including urban, biophysical, and socio-cultural, along with social participation, play an important role and might work as the basis for creating systemic planning guidelines focused on the proposal of a system of open spaces as a structuring element of urban occupation.

**INTRODUCTION**

The development of cities has, in general, followed an extended pattern, with a wide occupation of territory. This pattern usually follows the logic of road connections and other new ways of growth, which do not always pay due attention to the available landscape
resources, and thus often generate great imbalances in the urban landscape between the development/protection of open and occupied spaces and the needs of the people who live in it. It can be observed that the urban growth of many cities around the world, especially in recent decades, has been facing serious problems with regard to extensive urban occupation of the territory, which often results in settlements and roadways without cohesive plans of development, and open spaces widely segmented by the urban occupation mainly as protected land or land expecting new occupation, apart from socio-cultural disruptions and other factors.

In this context, urban landscapes tend to be seen as fragmented with regard to some of their most significant systems, namely their urban, biophysical, and socio-cultural systems.

Current urban planning guidelines, focused on extensive urban occupation, may play an important role in allowing and promoting such occupation and fragmentation of urban landscapes.

However, this fact also suggests that urban planning guidelines may play a key role in reversing this picture, that is, in restructuring it and in preserving the important systems of urban landscapes through urban interventions based on values that respect the integrity of the systems as a whole in the process of planning open and occupied spaces in an interrelated way, while paying attention to open spaces as possible structuring elements of the urban occupation. These urban interventions can also enhance and provide alternative actions, contributing to the performance of landscape dynamics and the preservation of resources in accordance with collective demands.

In this way, the various landscape systems including the urban, biophysical, and socio-cultural systems are understood as the basis for the understanding and analysis of the landscape, together with social participation as a collective designation from the citizens about the direction and destination of their landscape. Such an understanding makes possible fruitful interfaces regarding open and occupied spaces, with repercussions on the determination of urban planning guidelines and their implementation, focused on restructuring the urban landscape through the proposal of a system of open spaces as a structuring element of the urban occupation (Tardin, 2013).

It is believed that the interface between social participation and arguments from the technical analysis of landscape systems can generate valuable information to establish a dialogue between different social agents. This can form the basis for the planning of a system of open spaces as a possibility of renewing urban planning guidelines, in which nature and culture can be understood from a synergistic relationship in the process of continuous construction of the landscape.

In this sense, there is clearly a need to better understand the complexity of landscapes and the rescue of resources because such an understanding may provide an opportunity to generate new guidelines for urban planning and consequent renewed urban interventions on the related territory. Thus, acting on the territory according to its landscape systems, and especially open spaces, might serve as a key to “reading” and “interpreting” it, and for creating concrete intervention proposals for the delimitation of land use/occupation and activities with the intention of creating more balanced cities (Tardin, 2013).

In this way, urban planning based on landscape systems might act in the opposite direction of current urban planning tendencies focused on extensive urban occupation. First, it would identify the resources from open and occupied spaces along with collective demands, and then focus on how one can work to preserve and to create a system of open spaces while...
also conducting the urban occupation and fulfilling its needs according to the collective demands, available resources, elements, and processes of open spaces. This would require planning by thinking first of what should not be occupied and why, and second of what should be occupied, why, and how, according to the elements and processes of the open space system and the people’s intention. While such a procedure might create some technical arguments in the decision-making process in planning, at the same time it would help to influence urban development toward a more balanced approach.

It is important to observe and listen first, before intervention, so that one can recognize and analyze the urban landscape not only as a combination of systems, but also through the eyes of its citizens. The goal is to understand the landscape in its complexity before building urban landscapes, and to create a more balanced and cohesive relationship between open and occupied spaces, together with the people’s intention. To explain this approach, this chapter is composed of five parts: 1 – Urban landscape as a system. This part aims to understand the concept of landscape and its particular complexities; 2 – Systems of the urban landscape and concepts for planning. This part aims to recognize the urban landscape and its elements and processes within a system and how it can influence the urban planning process; 3 – Landscape and urban planning: Extensive urban occupation and landscape fragmentation. This part describes current urban landscape fragmentation and the inefficacy of traditional plans, focused on extensive urban occupation, in promoting landscape integration, while also neglecting an analysis of landscape as a system in the planning process; 4 – Planning a system of open spaces as a structuring element of urban occupation. This part proposes a system of open spaces as a structuring element of urban occupation and as being able to produce an interrelated urban landscape with the potential to establish new relationships between the relevant parts; 5 – Interface between social participation and technical analysis in planning the urban landscape. This part deals with the importance of social participation in the revelation of the intangible connections between the physical-spatial landscape and the values and meanings bestowed on it by the people who live in it; it also focuses on the people’s intention to act on the landscape as an important component to be considered in the process of planning.1

**Urban Landscape as a System**

In general, landscapes can be interpreted as the interaction between humans and nature over time, through the maintenance and/or adaptation of the natural environment to human needs and the consequent human interpretation of this creation according to its past and present practices and future aspirations. The urban landscape presupposes something vivid, which could be interpreted according to each individual and each society’s specific view, and which results in the “construction-transformation” of the landscape over time (Cosgrove, 1984; Berque, 2009).

This approach assumes an understanding of nature as devoid of “intention,” which would derive from human interpretation of the environment. However, while human intention

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determines the transformation of the environment, human intention is also influenced by the environment. That is, the intention itself is inseparably embedded in the process of transformation of and interaction with the environment.

In this sense, to recognize the landscape is, ultimately, to recognize what is decisive in the determination of who we are as a collective. In other words, it is the consideration of the landscape as a collective resource, as the collective action with the physical-spatial/functional territory. This collective action gives character to each particular landscape and shapes the landscape according to a collective intention. Thus, all landscapes are unique, resulting from the dynamic interaction of man and nature over time.

In this way, the landscape is the result of temporal, spatial, and functional processes, and also as the result of man’s interpretation of his environment, which, according to the values of each society, is a result of the interrelationship between nature and culture. Thus, the landscape is the result of the objective observation of the physical-spatial environment and of the collective or individual experience regarding it, in a process of constant mutation. This allows for an understanding of nature and culture as interrelated processes with a complex order that permeates the spatial and time scales.

The urban landscape can be represented by elements and processes of different natures, including biophysical, urban, and socio-cultural processes, which have physical, spatial, and functional instances, and by various human interpretations of these. Together, they determine a landscape’s character. The understanding of a landscape and its different aspects might be accomplished simultaneously across different levels or scales, and through relationships between elements and processes. This means that the structure of the landscape remains as, and constitutes, itself in a system.

A system is viewed as a set of elements capable of establishing physical-spatial/functional relationships as well as relationships related to the human experience of the landscape, all of which are simultaneously intricate and open, including the environment and the people who experience it. For the configuration of a system, it is important to recognize its elements, processes, and the relationships established between them and their surroundings, under mutual influences and relative autonomy (Santos, 2002; Folch, 2003).

Thinking in terms of systems allows for the extrapolation of the borders that delimit the elements and leads to the perception that the sets formed by such elements and processes are intimately integrated and definitively associated, both naturally and culturally, and are complementary in their functional and spatial conception (Santos, 2002).

A possible understanding of the landscape is achieved through the perception of its elements and processes arranged in a system. It is through such perception and the structuring of different dimensions and different forms of a landscape that one can understand not only the landscape itself, but also the many spatial and functional relationships related to it, and the possibilities of living in it. As such, one realizes that there is strong interdependency among the various dimensions of the landscape and, hence, among its elements (Folch, 2003).

In this context, the identification of the elements and processes of the urban landscape in a system requires the recognition of their parts and how they might be structured in different scales between regions and cities, together with the values and meanings assigned to them by a specific community. It is important to consider that the systemic organizations between elements and processes of the landscape can be endless, equal to the number of possible landscapes.
From this fact results a physical-spatial instance that can be embraced by our senses. Physically, one can understand the urban landscape from the parts occupied by settlements and infrastructure and the parts free of occupation, the open spaces (Font, 1999). In other words, one can say that the physical-spatial urban landscape is formed by the urban occupation and by the presence of spaces free from occupation, in varying scales, between the urban and the regional, which are intimately related. Moreover, the urban landscape involves a non-physical-spatial instance made of interpretations, values, and meanings, all of which are attributed to a certain place by the people who live in it.

An understanding of the urban landscape presupposes an understanding of the region and the city as interlinked structures organized based on existing conditions under which material and immaterial processes, ranging from the systems of open spaces, infrastructure, and settlements, to the social and cultural daily lives of each place, are developed.

Observation of the physical-spatial urban landscape in a system, between open and occupied spaces, allows us to understand how the landscape has been built, and how the elements, processes, and relationships developed over time. Conversely, knowing the people’s intention allows us to recognize the immaterial urban landscape, the affective dimension of the landscape, the current human experience, and its future intentions on its own landscape (Faga, 2006; Observatori del Paisatge de Catalonia, 2010; among others). Finally, both the physical-spatial dimension and the immaterial dimension are essential for planning landscapes in an integrated way.

The landscape holds great complexity while congregating the resources of the territory and the keys for its recognition and interpretation towards its effective planning and management. In this sense, to build a sustainable urban landscape means to create a good quality of life in our cities, with the preservation and development of fundamental resources that both generate and sustain it in its totality.

**SYSTEMS OF THE URBAN LANDSCAPE AND CONCEPTS FOR PLANNING**

Talk of the urban landscape and its elements and processes in a system ultimately involves discussing an integrated landscape, with attention given to the local and the regional landscape at the same time, and to the various elements, processes, and relationships that make it up. In this interpretation, open spaces and occupied spaces form a systemic whole and are the physical-spatial basis for human experience and human interpretation.

Knowing the elements and processes that form the urban landscape and the values and meanings assigned to them is very important. This is because such knowledge enables the possibility of knowing each part of the landscape and its particularities, and how their analysis and evaluation may be important as guidelines for urban planning and for the definition of urban interventions. On the other hand, discovering the meanings of the elements and processes of landscapes enables us to think of the possibilities of intervention that focus on the balance between collective needs and collective resources, which can ultimately result in planning, inhabiting, and living according to the needs of each piece of territory and its respective communities.
The systems of the urban landscape include:

- The urban system, which consists basically of the elements and processes related to urbanization (open spaces and occupied spaces), their physical-spatial configurations, their established uses and activities, and their planning rules. These are parts of the city that comprise the spatial/functional structure, all of which are essential for urban life (Font et al, 1999; Salvador Palomo, 2003; Tardin, 2013; among others).
- The biophysical system, which is related to the natural elements and natural processes realized on open spaces. It consists of the elements necessary for the development of natural processes, such as vegetation, slope gradients, soil, water systems, and climate (McHarg, 1969; Gambino, 1992; Forman, 1995; among others).
- The socio-cultural system, which is related to the life of a community, its values, and its meanings. These values will be present in the arts (architecture, music, painting, sculpture, etc.), in the techniques and chains of production, in the distribution and consumption of goods, in religion, in philosophy, and in ordinary daily life. They are values and meanings assigned to the physical-spatial structure of the landscape and its organization, followed by their respective impacts on human relationships with the territory (Dematteis, 1995; Cosgrove, 1984; Folch, 2003, among others). Indeed, it is important to highlight the importance of recognizing the perceptions and affective attachments citizens have about a particular place by listening to what they have to say about it rather than observing and analyzing the landscape in an abstract way, devoid of real people’s intentions (Faga, 2006; Observatori del Paisatge of Catalonia, 2010; among others).

Investing time in the analysis of the different systems that comprise landscapes leads to the understanding that landscapes are the result of temporal processes along with spatial and functional processes, and of the interpretations of people with regard to their environment, according to their needs, affective attachments, and lifestyles. This is because the values of each society change with time, along with its attempts at planning the physical-spatial environment. In this sense, having knowledge of the history of how elements and processes have been transformed over time implies the possibility of understanding the origins of the current problems and current potentials of a landscape, which is important for planning it successfully.

A material-immaterial analysis of landscape systems allows for the extrapolation of boundaries that define spaces (e.g., the administrative boundaries) and leads to the perception that the landscape is closely integrated and has its systems definitely associated, whether they are urban, biophysical, or socio-cultural systems. This interpretation represents a possible “reading” of landscape systems in the interest of a full apprehension of nature and the human experience of the landscape. However, this is not demarcated by rigid boundaries and, in contrast, presents great fluidity between elements, processes, and scales.

Thus, experiencing the landscape presupposes knowledge of its systems, their articulation, and their subsequent breakdown in the process of formation and transformation of the landscape, which are completely independent of abstract limits. This results in an understanding of, and acting on, the landscape to recognize it at its essence, its intricacies, its structure, its body, and especially its systemic processes under human experience.
Considering the landscape in this way may have important repercussions on the planning process, regardless of whether one is considering a city or a region.

In the urban landscape, various systems comprise a single system that should be taken into account systematically by planning to understand and to evaluate the landscape and to intervene in its internal structure. Thus, it is possible to act in the systems, providing them with a continuous movement, which allows for the development of the dynamics of each of their parts in constant interaction and closely related to the human experience of the landscape. Taking this systematic approach into consideration, some concepts for planning the urban landscape in a system should be observed as principles to guide one’s recognition and decisions regarding the systems of the landscape:

- **Diversity.** The degree of co-existence and interrelation between different elements and processes in the systems of the landscape, both natural and human, to maintain physical-spatial/functional integrity and the “life” of the landscape in space and time.
- **Equity.** The degree of distribution of landscape resources in space and time to maintain its diversity, considering the costs and benefits of this process.
- **Efficiency.** The degree of optimization of the use of landscape resources in landscape construction to maintain its diversity and equity, considering the costs and benefits of this process.

The application of these concepts in the planning of the urban landscape can denote a certain quality for a landscape. This quality includes the degree of congruence between the dimensions of each system in its interaction with the others, with respect to the spaces they occupy, to the functions they accomplish, to the possible human experiences of it, and to the amount of time needed for the development of each dynamic involved in the processes.

Also, in the application of these concepts, a concrete understanding of the physical-spatial and functional processes of the landscape systems, through observation of the urban landscape (open spaces and occupied spaces) and its temporal character, and of the current collective intentions on a landscape comprises important data for the recognition of the past and present of the dynamics of such a landscape. This includes mapping this data, relating it to other data, and proposing concrete projects for planning. Thus, one can realize technical arguments to develop projects and planning towards effective actions on a specific urban landscape.

Based on these concepts, one seeks to recognize and to evaluate the current systems of the landscape and to specify the quality of the landscape, either existing or to be achieved, by relating material and immaterial instances in a balanced way through technical arguments that will guide the urban planning and its repercussions on open spaces and occupied spaces. Practically speaking, according to these concepts and the landscape systems, as general intentions for urban planning to get quality for a landscape, one can mention:

- To value the preservation of the natural environment, necessary for the maintenance of natural elements and natural processes.
- To value the visual attributes of a landscape that give it a special identity.
- To value social inclusion to access the resources the urban landscape offers, especially public services and facilities combined with satisfactory conditions for housing and network accessibility.
To value local traditional communities and their living conditions to preserve local cultural characteristics.

- To value a sustainable and inclusive economy, considered from inclusive production chains, and which is socially, culturally, and biophysically responsible.

- To promote urban settlements towards the construction of optimized infrastructure and towards proposed land uses, buildings, and urban open spaces that may be structured by the system of open spaces and perform as a result of the interface between the systems of the landscape and the appreciation of its attributes.

**Landscape and Urban Planning: Extensive Urban Occupation and Landscape Fragmentation**

The development of cities has generally followed an extended pattern, with a large territory occupation based usually on the logic of connecting roads and new forms of growth. It is often driven by strong real estate development whose intention is usually to occupy without proper attention to the landscape, which creates imbalances. Attention tends not to be paid to the preservation of resources and the values of the systems of the landscape, which are composed by the physical-spatial environment and its inhabiting people as an indissociable set that sustains itself and renews itself over the years.

In many cases, the formation of most cities has progressed through the application of an introverted logic of construction, producing spaces that tend to be unrelated. Fragmentation of the landscape can be viewed as the product of a number of factors. These include the non-consideration of citizens' intentions, the construction of infrastructure that has little to do with the environment, the presence of settlements that are often not well articulated, the insufficient presence of urban open spaces that often tend to be empty, and the existence of protected areas designed as nature sanctuaries that are, therefore, turned inward by their very nature. In general, in this context, urban and biophysical systems are seen as antagonistic and are reflections of a segmented “reading” of both parts, including the spatial, social, and functional segmentations. Many of the effects of this reality are due to positions taken by urban planning, which traditionally tend to encourage extensive occupation versus the protection of nature.

Usually, plans with a focus on urban occupation tend to consider environmental legislation as constituting restrictions on development, or as "limits" to urban settlements, which tend to be built as the negative side of nature. In this dynamic, the “logic” of urban occupation juxtaposes with the "logic" of environmental legislation, and neither one tends to incorporate systemic thinking about their resolutions (Tardin, 2013).

In this perspective, there is a predominance of plots of nature protection areas and already occupied areas, along with predictions for new urban occupations. This process does not consider the potential of open spaces as important elements for the integration among parts of the built landscape, the preservation of important biophysical and socio-cultural attributes of the landscape, and as possible structuring elements of urban occupation. Also, this approach does not consider open spaces as assets in the process of urban development, different from traditional environmental reserves, and capable of structuring the urban occupation in its development process (Tardin, 2013).
Physically, the result of such kind of planning tends to be an imbalanced urban landscape composed of fragmentary relationships among important systems of the landscape. To redirect this picture one can think of the adoption of physical-spatial planning criteria based on the perspective of the interrelationship between open spaces and occupied spaces and their dynamics as a whole, such as the urban, biophysical, or socio-cultural dynamics, along with social participation. On the other hand, there is also a need to determine, to control, and to manage the construction of urban settlements and the conformation of open spaces more related to, and based on, human values, and on the resources of the landscape.

In light of these circumstances, one can notice that, usually, in the traditional planning of the urban landscape there is a lack of strategic guidelines dealing with landscape complexity, with its distinct instances and inevitable evolution. This means that guidelines are needed that are broad in scale and capable of associating the urban and regional landscapes based on their systems and variables of analysis. Specifically, this could take the form of guidelines that go beyond area delimitation and its respective use of soil and type of occupation, and that could be more focused on concrete projects for the urban landscape for further action on it by creating planning, design and management strategies for both open spaces and occupied spaces. This could also take the form of guidelines that reflect an alternative way for planning based on the concept of a system of open spaces as a structuring element for the development of urban occupation (Tardin, 2013).

Such guidelines could reverse the traditional tendency of the extensive occupation of territory and propose an interrelationship of landscape systems along with the human experience of the landscape through the planning of the system of open spaces, mainly in non-consolidated areas, that present greater flexibility regarding their future designations in the process of urban development.

Hence, such guidelines might ensure both systemic analyses and systemic actions on landscapes by encouraging urban development and the maintenance of territory resources in an integrated way. In this conception, the biophysical system, the urban system, and the socio-cultural system comprise a single system in which nature and culture come together as one; they are interrelated and establish synergic relationships with each other reflected in both open and occupied spaces.

**PLANNING A SYSTEM OF OPEN SPACES AS A STRUCTURING ELEMENT OF URBAN OCCUPATION**

Understanding of the complex nature of the urban landscape is critical to its construction, in which occupation and open spaces comprise a whole, and in which the planning of these in an interrelated way can intervene substantially in the definition of urban occupation, and vice versa, reversing the currently fragmented urban frame. Such understanding allows for the proposal of a system of open spaces as a structuring element of urban occupation and a form of guidance for urban planning that is able to produce a sutured urban landscape with the potential to establish new relationships between its relevant parts. It also allows for the planning of the urban landscape in a systemic way through the interrelated relationships among various processes. It is thus important to recognize open spaces together with occupied spaces, and the primacy of collective values, as fixed points for decision-making in the
planning of urban landscapes, with an emphasis on the creation of a system of open space as a structuring element of, and directly related to, the infrastructure, mainly roadways, and settlements (Tardin, 2013).

Specifically, this can take the form of predicting open spaces with the intention to protect, define, and relate them to the surrounding roads and settlements, whether existing or yet to come; predicting the roadway infrastructure while considering the definition of the road network and its variations, such as the areas of flow between the urban occupation parts or between the open spaces, and in accordance with the system of open spaces and settlements; and predicting settlements that follow a plan in accordance with the system of open spaces and related to the roadway infrastructure (Tardin, 2013).

Planning a system of open spaces as the first step in planning the urban landscape involves determining those areas where it is not advisable to occupy or that must be occupied under certain conditions, such as ensuring the protection of the collective resources of paramount importance for the biophysical, urban, and socio-cultural processes. Restrictions in relation to the urban occupation of open spaces can be determined according to the following implications (Tardin, 2013):

- The need for the development of natural processes, such as spaces and connections necessary for water dynamics, fauna and flora, and soil, as well as the observation of the risks that engender such dynamics, e.g., the possibility of flooding or landslides.
- The need for the valorization of the visual structure of the landscape, as a fundamental attribute for the maintenance of the visual identity of a place.
- The need to control and to integrate the urban occupation, including: limiting the scope of occupation, having more open space in very densely populated areas, creating open spaces between fragmented settlements that have little to do with each other in order to articulate them, and creating some public soil reserves to further negotiations regarding the development of urban occupation.
- The need to attend to the demands related to socio-cultural values by identifying the relationships between the community and their landscape, such as the values that are designated to the open spaces, whether they are visual, historical, social, religious, or productive. These values are relevant to the use and distribution of such spaces as a way to balance their presence and the opportunities for the development of activities and affective values that form the basis of the daily life of a community.

As a result of this analysis, one can construct a diagnosis for open spaces that includes a determination of their strengths and weaknesses. The strengths of open spaces can include any resources and values that should be preserved or developed, while the weaknesses can include any resources and values that must be changed or that have no great relevance to the organization of the system. This allows us to identify areas that should be preserved and areas that are more conducive to urban occupation, which can be structured by the presence of open spaces and their attributes.

At the same time the system of open spaces is established, along with urban occupation, it is important to think about the possibility of optimizing existing urban occupation with regard to settlements and roadway infrastructure and the importance it has in the development of the dynamics of the various landscape systems. Practically speaking, in the case of settlements it is important to take actions aimed at, among other things, the renewal of
existing settlements and the creation of new settlements, which are, if the circumstances warrant, structured by the system of open spaces that consider the dynamics of the various landscape systems. Here, it is beneficial to use strategies that increase the possibility of integrating the urban fabrics, balancing the use of soils, and preserving nature and social life.

The creation of new nuclei could incorporate low cost construction, increased control of the urban expansion according to the system of open spaces, and the definition of new patterns of settlements with, for example, the introduction of natural elements and natural processes in the construction of settlements, either through water (which could define the main roads and water connections) or vegetation (which could penetrate and determine the occupation of spaces around the buildings), thereby structuring it (Tardin, 2013).

Moreover, the restructuring of existing urban settlements could assist in the consideration of open spaces as an articulating element between settlements. Also, it is important to pay attention to the possible compaction of settlements, the use of existing public facilities, the rehabilitation of degraded settlements, and the preservation of built heritage, among other possibilities. Additionally, one can favor the functional autonomy of settlements, a greater diversity of activities and people, and a better distribution of uses. The creation of new public facilities, where required, helps to produce greater equity among communities. On the other hand, one can favor the establishment of new uses that relate the interior of settlements with the surrounding open spaces, a mixture of various types of buildings, and the introduction of rhythms and spatial sequences, and also encourage the creation of multiple centers. Conversely, the proposal of urban uses and rural uses in the natural environment can favor the relationship between settlements and open spaces, with, for example, a sufficient amount of public facilities, a sufficient supply of water activities, the possibility of logging, or the possibility of farming with cultivation techniques and the types of crops suited to the functions of the local biophysical processes and visual perceptions (Hough, 1998; Tardin, 2013; among others).

In this sense, planning open and occupied spaces together can help to cope with existing settlements and future ones in a systemic way. Such planning points to the need to inhabit the urban landscape in a sustainable way and according to the demands of the collective. The objective is thus to achieve an efficiency of urban occupation based on the costs and benefits it involves, whether they are related to the socio-cultural system, biophysical system, or the urban system. Apart from the spatial and functional decisions related to the settlements themselves (such as related to land use, density, and type of construction), which are derived from the types of analyses traditionally taken by urban planning, the consideration of established relationships between open and occupied spaces might affect and restructure the definitions of the settlements in different ways and according to the elements and processes of the system of open spaces as guidance in the construction of the urban occupation, such as with respect to its most appropriate land uses, land subdivisions, land occupation, density, and expansion (or lack thereof). Moreover, the consideration of established relationships between open and occupied spaces might affect the definition of roadway infrastructure and the possibilities of experiencing the landscape.

In such a case, the restructuring of road infrastructure involves considering the roadway network distribution with a focus on the resources and values of the landscape and people’s needs aligned with the system of open spaces, for example, by respecting the topography and the natural processes; taking advantage of the vegetation and water to structure the design of the roadway network; avoiding the “barrier effect” of water, animals, and plants, which can
be caused by roadways, by promoting passes through sections of the road; respecting and valuing visual, socio-cultural, and biophysical processes when designing the roads by the creation of lookouts, sidewalks for pedestrians, and places for alternative means of transportation; and adapting and implementing projects for the water supply, sanitation, the electricity supply (and alternative sources of energy), the selective collection of waste, and communication services (McHarg, 1969; Hough, 1998; Tardin, 2013; among others).

In addition, with regard to roadway infrastructure, besides allowing for the occupation of the urban landscape along with increased mobility, it also helps to establish important relationships among the components of the landscape between open spaces and occupied spaces, and the respective dynamics of the landscape. However, it is important to highlight the priority of optimizing the use of existing urban infrastructure, which refers to acting in favor of the compaction of the urban occupation, and avoiding its dispersion.

The project of roads could include, for example, proposing roads with attention to the hierarchy of spaces (e.g., main access streets, streets of internal distribution, access roads to buildings), encouraging coexistence between vehicles and people, promoting functional and spatial relationships between settlements, encouraging the use of public alternative transportation means, proposing the creation of pathways that penetrate natural spaces and connect the network of rural roads to urban roads, proposing the revaluation of the network of historic roads with a civic character and that is appropriate for leisure, and proposing the revaluation of the watercourse margins as possible ways for pedestrians and bicycles (McHarg, 1969; Hough, 1998; Tardin, 2013; among others).

In the process of planning the system of open spaces, cartography represents an important tool for registering observations and understandings of the landscape, the problems and potentials of each system, and the interrelationships established among the systems. Through cartography, one can record the elements and processes of the landscape, its values and meanings, and also its mutual affectations, thereby identifying where problems may or may not occur, and places for existing potentials. It is worth mentioning that the characteristics that engender cartography as a possible way to crystallize processes at any given time require constant updating. This necessity, however, does not decrease its importance in the planning of the urban landscape. In contrast, it enables the medium to serve as an effective tool for communication, design, and the demonstration of analyses and proposals, because it constitutes a tangible representation of the possibilities of intervention. Also, cartography may represent a possible interface between technical analysis and the recording of the demands of the collective, thus functioning as a collective letter of intention for the planning of the urban landscape (Observatori del Paisatge of Catalonia, 2010).

**Interface between Social Participation and Technical Analysis in Planning the Urban Landscape**

The landscape as a collective fact develops a collective character given to it by the people who live in it and who affect the landscape’s construction as well as being affected by it. That is, there are values and meanings attributed to a landscape and a collective intention to build a landscape that should be recognized and discussed with people and their representative institutions (governmental) and both the private sector and non-governmental sector, all of
which should be brought into the decision-making process of planning the urban landscape (Faga, 2006; Observatori del Paisatge of Catalonia, 2010; among others).

The importance of social participation in urban planning is already known (Hague and Jenkins, 2005; Faga, 2006; among others). The process of social participation involves listening, interpreting, going back to listen to citizens again, running new interpretations, and returning yet again to repeat the process. It is a process in which the listening, interpreting, and checking the given information allow for the identification of some collective intentions regarding a specific landscape (Faga, 2006; Observatori del Paisatge of Catalonia, 2010; among others).

In this sense, social participation allows for the identification of values and meanings attributed to a particular landscape by the experiences of the people living on it, the identification of their “reading” of it, and the identification of the consequent narratives people build as a construction of their own landscapes. This could be, for example, the values and meanings that can be attributed to the visual perceptions of a certain landscape, to its social uses, to the current and past beliefs of the people, to the economic activities carried out on the landscape, and to the inhabitants’ daily life experiences and affective attachments, which vary over time and work to configure the reason for the existence of a given landscape (Observatori del Paisatge of Catalonia, 2010).

In addition, social participation allows for the identification of practices that give a landscape its character, as well as the collective intentions that serve to maintain or transform those practices. These practices belong to the citizens of a place which may be represented by any individual citizen and institutions involved in the process of construction of a landscape.

Thus, the identification and documentation of the values and meanings attributed to a landscape summed to form the collective intention to build a landscape and represent a radiography of the collective intentions regarding the present and future of a landscape. This radiography enables discussions and commitments among the parts involved in the process of planning, and it allows one to create guidelines for the planning of the urban landscape.

In this context, social participation held concurrently with technical analysis in the process of conception of a plan should allow for the elaboration of the process of planning as intended by the citizens in close negotiation with institutions. However, apprehension of the collective intentions related to social participation engenders a given time and a certain impossibility of covering all of the citizen’s intentions, or even of obtaining a consensus, given the diversity of people and conflicts. Other limitations to the legitimacy of the process of social participation relate to, for example, who and how many people attend meetings, how such meetings are structured and developed, and the issue of whether there is (or is not) a real intention to develop a fully inclusive participation process in planning. Although social participation has increasingly (since the 1960s) gained status as an effective guideline for the deliberations of plans, it still faces restrictions on how it is performed, and when it is performed in the process of planning. It also faces restrictions on the legitimate use of social participation in the actual decision-makings process of planning, which might be contested owing to the possibility of being a manipulated process, which is a real risk. In many cases, social participation is reduced to the presentation to the public of the findings of a plan “built in the dark,” far from public debate. In other cases, collective considerations can suffer arbitrary inductions from an incomplete interpretation, which, for example, favors one sector over another, which would amount to more of a manipulation of the social participation process than the result of an effective participation process itself (Arnstein, 1969).
However, despite such drawbacks, it is believed that the process of social participation represents an opportunity to build a collective and serious discourse followed by collective decisions, which together with technical arguments derived from analyses of the systems of the landscape and specifically from the proposal of a system of open spaces form guidelines for planning the urban landscape. In this sense, the whole (i.e., technical arguments plus social participation) forms a set of two-way movements in which technical knowledge can be made available that assists in reflection and the joint construction of concrete proposals for action on the urban landscape around the collective demands of planning.

The final product could be a plan understood and legitimated as a collective construction and designation of a community on its own landscape. This plan should reflect collective values, collective meanings, and collective practices, molding present and future scenarios according to the goals, interests, and conflicts present in the landscape. In this process, the technical arguments can emphasize aspects of the physical-spatial landscape that had not been previously observed by the citizens, and they can also emphasize any potential impacts, positive or negative, of the intentions of the citizens on the dynamics of the landscape. In this process, the planner should act as a “catalyst agent” by structuring the guidelines for planning, which should reflect the dialogue between social participation and technical analysis. The structuring of the guidelines for planning involves facilitating collective decision-making where technical analysis and the arguments that come from it might help to clarify disagreements and to guide political discussions, while also indicating possible consequences and ways forward to take a particular decision. In this sense, the collective discourse can be taken as the motivation, or the reason why certain relations between the systems of the landscape should be established by planning with the support of technical arguments, thereby indicating possible planning guidelines.

Thus, the interface between social participation and technical arguments can result in guidelines for urban planning that are more compatible with the proposed construction of a systemic landscape. In this way, the possibility is created to contribute to the social organization around the collective planning of the urban landscape reflected in the decisions taken in the planning process. Thus, the plan is seen as a guide to the collective construction of the landscape based on well-defined technical arguments. The plan, therefore, internalizes one of its key roles: the defense of collective values as a basis for the public management of the resources of the landscape. In this context, one can realize better answers to some important questions that could be raised regarding a plan: For whom is the landscape for? Who plans it? How is the planning done? Why do the planning? To what ends does the planning serve? In addition, collective planning helps to ensure that any gains and losses in the planning process are enthroned in the decisions and responsibilities shared by the stakeholders.

**CONCLUSION**

A systemic approach to planning the urban landscape implies, ultimately, the creation of a collective project of the landscape, which can be thought of as a response to the question of what kind of landscape a collective wants to realize. A collective project derived from the interaction between the recognition of the various systems of a landscape, and specifically
from a proposal of a system of open spaces as a structuring element of urban occupation, and social participation can determine a new agenda for a city. This corresponds to a more strategic and dynamic view of planning than the traditional perspective of plans taken separately from a systemic view of the landscape, or the perspective of plans that do not consider the collective intentions or their broader impacts on landscape systems, all of which tend to lead to ineffectiveness in addition to greater fragmentation of the landscape.

The possible relationships between the recognition and analysis of the elements and processes of the systems of the landscape, along with the proposal of a system of open spaces, social participation, and their combined effects on planning, together represent the interfaces in the deliberations of urban planning and the countless possibilities of developing systemic projects of different scales between cities and regions. This does not indicate an abstract landscape, but rather a lived landscape, that is, a human landscape, whose planning can be guided by concrete proposals for action rather than by patches or abstract lines.

In this context, it is emphasized the importance of considering the systems of the landscape, the proposal of a system of open spaces, and social participation as active agents of urban planning that provide measurable arguments for negotiation and public debate for the purpose of building proposals for urban intervention. This requires the understanding of the landscape systems along with the understanding of the values assigned to those systems, and the systemic relationships among them, which will then form the basis for urban planning guidelines through the proposal of a system of open spaces.

Such guidelines lead to consolidate a complex view of the landscape and, consequently, represent the recognition of the importance that the landscape has acquired in urban planning and, especially, the system of open spaces in the conduction of the future growth of occupied territory. These guidelines look for urban intervention alternatives and seek to make viable the sustainability and efficiency of the landscape, with the view of the landscape as an urban, biophysical, and socio-cultural asset. To this end, the analysis of and acting on the landscape involves the elaboration of urban planning that is focused on the specific needs of each place, according to the resources available as well as the landscape’s unique values.

In this context, the main challenge for planning the urban landscape focuses on creating guidelines capable of reflecting the landscape quality to conduct the elaboration, execution, and follow-up of urban development. Specifically, these include guidelines that result in instruments of decision, through landscape criteria capable of supporting territorial development and its management processes, and guidelines in which the landscape as a whole gets a leading role in the process of planning, and in which the system of open spaces can serve as the conductor of the structuring of urban occupation.

However, the implementation of such planning also depends on the proper and integrated management of resources, with effective supervision over the development of the landscape. Moreover, such planning also implies the conjunction of spatial planning with permanent public policies that can enable the resulting proposals.

In sum, a systemic approach to landscape and urban planning, as presented here, is closely related to the recognition of the systems of the landscape, the proposal of a system of open spaces, along with social participation, as a basis for urban planning, which includes: trans-disciplinarity, as the integration of different approaches on the landscape that are usually represented by speeches and actions that tend to exist in isolation; trans-scalarity, which is the understanding of the multiple scales of the processes carried out across the landscape, which are interrelated in a system; trans-temporality, which is the awareness that
there is a past that must be understood and a future that depends on our actions and intentions in the present, which should be recognized and managed, and which should ultimately lead to more satisfactory results.

REFERENCES

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